

# User Facility Logistics and How to Write a Proposal

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# DOE National User Facilities

NSLS-II



CFN



- 27 DOE national user facilities
- Tens of thousands of scientists use them each year
- Access to expertise and instrumentation that is not typically found in a academic or industrial laboratories
- Examples: supercomputers, particle accelerators, x-ray light sources, neutron sources, facilities for nanoscience and genomics

## Access to DOE User Facilities:

- Non-proprietary: peer-reviewed access – FREE, >90% of all access
- Proprietary: beamtime full cost recovery
- Other mechanisms
  - Strategic Partnership agreements
  - Collaboration Research and Development agreements

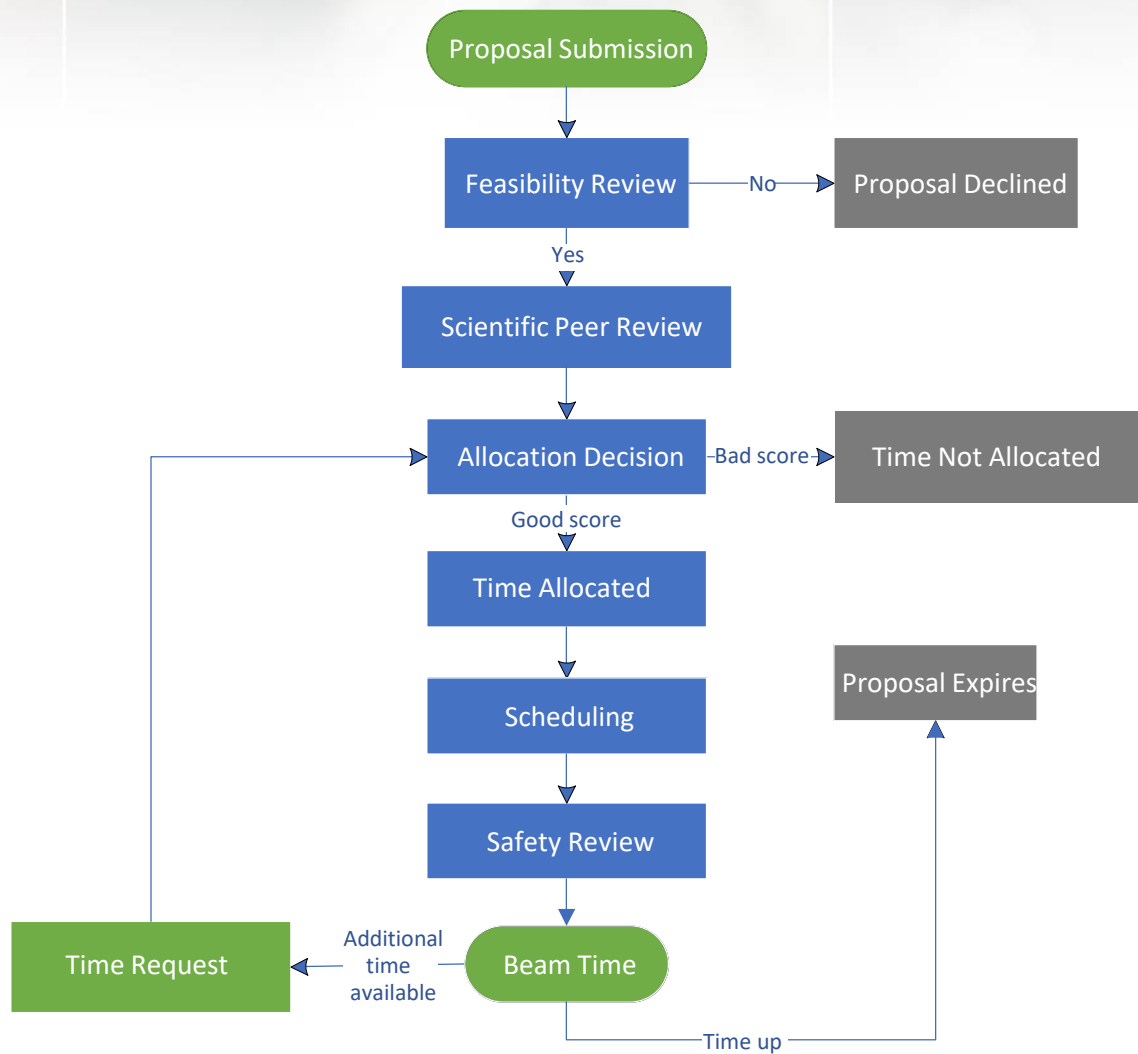
# NSLS-II & CFN Proposal Overview

- Facilities operate 5000 hours of instrument time per year
- 3 proposal cycles per year
  - January – April (proposal deadline Sept 30)
  - May – August (proposal deadline Jan 31)
  - September – December (proposal deadline May 31)
- >1000 proposals / time requests each cycle at NSLS-II + CFN
- Proposal lifetime is variable (1 – 9 cycles depending on proposal type)
- A “time request” is required each cycle that instrument time is requested.
- Multiple instruments/beamlines may be requested in a single proposal
- Soon a single proposal will be possible to use both NSLS-II & CFN
- NSLS-II User Guide: <https://www.bnl.gov/ps/userguide/>
- CFN User Guide: <https://www.bnl.gov/cfn/user/>

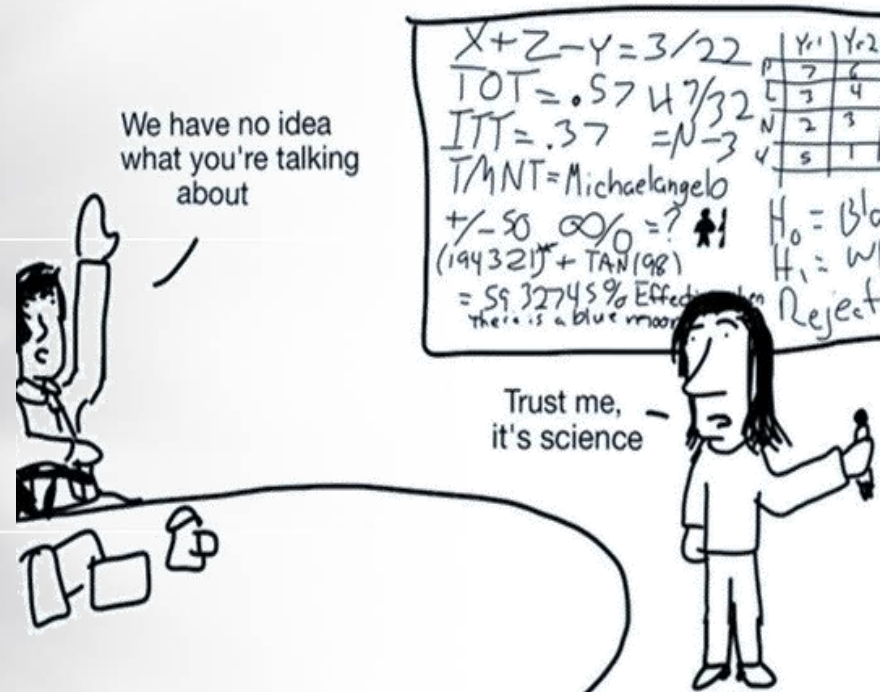
# Types of Proposals

- **General User** (NSLS-II: 1 year; CFN: 2 years) – most common form of user access for routinely-supported techniques
- **Rapid Access** (1 cycle) – rapid access to instrument time for “hot topics” or for straightforward experiments using routine techniques with a fast turnaround time
- **Partner User** (up to 5 years) – user groups who also enhance the facility capabilities and/or contribute to the facility operation
- **Block Allocation Groups** (NSLS-II only, 2 years) – groups of researchers that want to combine their short beam time requests into a single proposal to permit greater flexibility in beam time scheduling
- **Proprietary** (up to 3 years) – full cost-recovery instrument time

# Proposal Flow



# How to write a (good) nonproprietary proposal





# First Step

Visit the NSLS-II or CFN instrument guides:

- CFN instrument directory: <https://www.bnl.gov/cfn/equipment/>
- NSLS-II beamline directory: <https://www.bnl.gov/ps/beamlines/>

Visit the NSLS-II or CFN user guides:

- CFN User Guide: <https://www.bnl.gov/cfn/user/>
- NSLS-II User Guide: <https://www.bnl.gov/ps/userguide/>
- Review the following information:
  - Proposal types and templates
  - Review criteria
  - Proposal deadlines
  - Instructions for user appointments, training, and logistics

# Reviewer Evaluation Criteria

Proposals are rated on a score of 1 – 5 (1 being the best), based on the following criteria:

- Scientific or technological merit of the proposal
- Consider NSLS-II / CFN, its facilities and mode of operation. Is the proposed work a good use of the facilities and expertise
- PI's track record based on previous work and/or (b) past accomplishments
- Is the proposal well written? Is it clear what the proposer intends to do? Have the scientific ideas been well thought out?





# Next Step

- Before submitting a proposal you should first identify the instrument(s) that are needed for your project and contact the Instrument Scientist.
- If you are a new or inexperienced user, it is common to collaborate with the instrument scientist on your project.
- Discuss with the Instrument Scientist:
  - Does the instrument meet the specifications required for your project?
  - Does your project require additional instrumentation or a non-standard configuration? Can the instrumentation be supplied?
  - The amount of time that would be required to complete your project.
  - Can a preliminary feasibility check be made on your sample?



# Write your proposal

## Title and Abstract

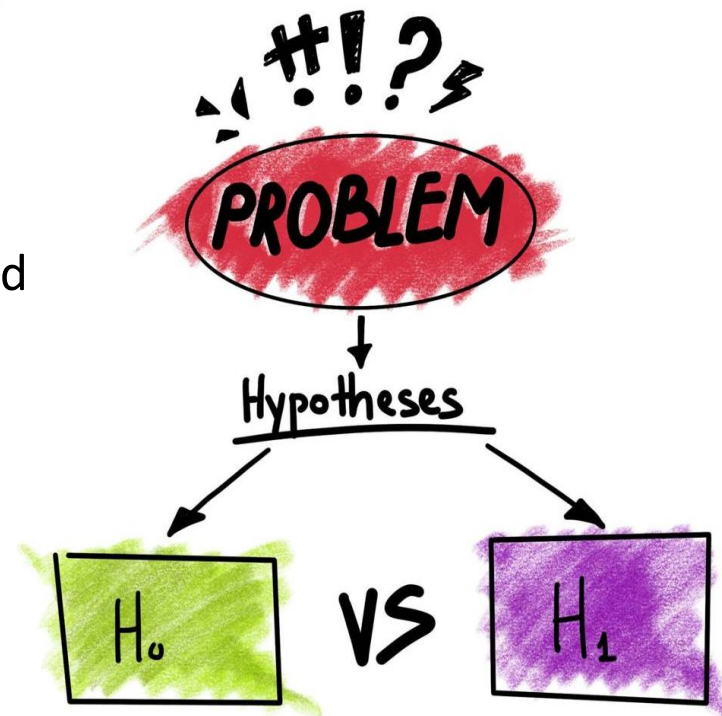
- The content of your proposal is treated as confidential except for the proposal title and abstract. These are sometimes used in reports to funding agencies.
- Abstract should provide a brief overview of the project without revealing any experimental details that you want to keep private.



# Write your proposal

## Scientific Importance

- Explain your **science question** at the level of a scientist, non-specialist. What is known and not known? Why is it important?
  - Example: We are studying world hunger and want to improve plant growth in poor soils
- Give a **hypothesis** that will be tested by your proposed experiments.
  - Example: We want to use X-ray spectroscopy at NSLS-II to measure the Ti pre-edge peak area. We hypothesize that the Ti pre-edge peak area is indicative of tetrahedral Ti, which helps to retain P in soils and this helps bring nutrients to plants.



*Example credit: Shelly Kelly, Honeywell*

# Write your proposal

## Research Plan

- Provide literature background, correlative measurements, or other lab work that **support your hypothesis**.
  - Example: We have made measurements in the lab with artificial mixtures of soils varying the amount of  $\text{TiO}_2$  and treated them with P fertilizers. We found that soil pH is critical between 6 and 10.
- Explain specifically **what you want to do** in a stepwise fashion.
  - Example: We will measure Ti XAS of 12 samples, at pH 6-10, with varying amounts of Ti and P. If A happens, we'll do this next. If B happens, we'll do this next.



Example credit: Shelly Kelly, Honeywell

# Write your proposal

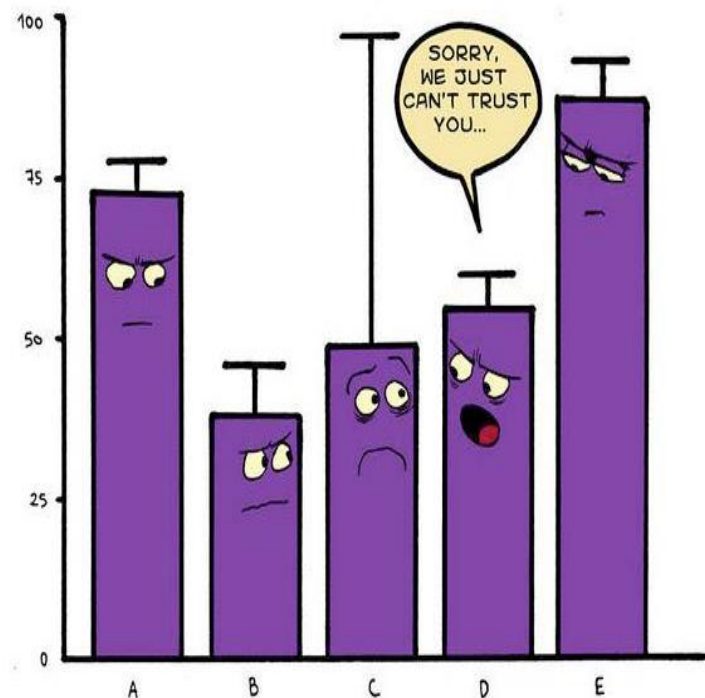
## Research Plan

- **Justify the time** requested

- Example: We will examine 10 samples under 6 conditions for a total of 60 samples. Each sample takes 10 minutes to collect and 10 minutes to change samples. Therefore, we will need 1200 minutes (20 hours) to collect the data. We'll need about 4 hours for setup time, which is approximately 1 day of time for these experiments.

- Describe how you will **analyze your data** and what you expect to see

- Example: We simulated 4- vs. 6-coordinate Ti and you can see the differences. Therefore, we are confident that we can use this difference to address our hypothesis.



*Example credit: Shelly Kelly, Honeywell*



# Write your proposal

## Tell us about yourself

- Are you a first-time user? If yes, we encourage collaboration with instrument scientists
- Are you a student or postdoc? If yes, tell us about your Principal Investigator. Students should not be the PIs on a proposal.
- Are a regular/experienced user? If yes, provide your publication record in the scientific area of the proposal and describe why you are qualified to do the work.





# Safety Approval Form

- Each proposal is accompanied by a Safety Approval Form (SAF). In the Safety Approval Form you describe any hazards associated with your proposed experiment (chemical, electrical, environmental). You also provide the names of all the experimenters involved with the project.
- A SAF must be submitted after time is allocated and at least 14 working days prior to the start of beam time.



# Last Step before Submitting

- Review by the Instrument Scientist:  
If you are a new user, it is strongly suggested that you ask the instrument scientist to review and critique your proposal. But don't send it at the last minute; they get a lot of these requests!



# Questions?



*Isaac Newton struggles to write the economic impact section of his 'gravity' proposal.*